Pest&Crop

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In This Issue

Insects, Mites, and Nematodes

Aphids in Indiana Soybeans, What's the Scoop!?!?

– (*John Obermeyer, Rich Edwards, and Larry Bledsoe*) –

- Aphids attacking soybeans in the Midwest have gained much attention
- Soybean aphid may or may not be the culprit
- Aphids are present in Indiana soybeans, species and distribution is in question
- Your help in documenting aphid sightings in soybeans is needed
- Informational web sites listed below

Since mid-July, there have been reports out of southern Wisconsin of aphids attacking soybeans. Soon the infestations and crop damage "spread" to counties in northern Illinois. Now, reports of aphids in soybeans are being received from Minnesota to Indiana. Awareness of this "new" pest of soybeans became quite public with an article in the *Wall Street Journal* on August 17 ("Chinese Aphid Menaces Soybean Crop In US Midwest"). Please refer to last week's *Pest&Crop* for a good overview of this potential pest, "New Soybean Insect Damaging Fields in Southern Wisconsin and Northern Illinois."

What's new with this aphid? Initially, it was thought that they were a cotton/melon aphid. Then it was identified as the soybean aphid, *Aphis glycines*. The soybean aphid originates from Asia, thus the "Chinese Aphid" name. Then word circulated throughout the industry that any aphid found colonizing soybeans must be the soybean aphid…WRONG! The latest is that some or all the aphids being reported may be an indigenous species (*Aphis craccivora*) that feeds on legume crops and has been observed on soybeans in the past. The bottom-line: if *Aphis glycines* has been introduced and is establishing in the Midwest, it is of economic importance to producers for the future. However, we need to find winged females to positively identify them and they are scarce at this time. In a couple weeks the winged females, as they prepare to leave the soybeans to lay overwintering eggs, should be easier to locate and thus identify.

Does Indiana have them? We've received one report from Lake County of a producer treating for aphids on soybeans. The plants were honeydew coated, stunted, and yellowing. Ron Blackwell, IPM Survey Specialist, while conducting soybean sweeps for western corn root-

worm beetles, has been watching out for them. All soybean fields in the northern tier counties of the state that he surveyed had aphids present, none showing obvious damage. Samples have been collected and submitted for rearing and positive identification. Ron has also found the aphids present, at very low levels, in west central counties.

What are Purdue entomologists going to do about this? First and foremost our efforts will be to follow-up on reports of the aphid's presence and documenting these infestations in Indiana. Obviously, we are going to need your help! We have appreciated the calls that we have received, please contact us with your further observations (765-494-4563 or obe@purdue.edu). Already entomologist's throughout the affected area have conversed about putting together a unified plan of action concerning future research and outreach. With limited funds and personnel, land grant colleges don't have the luxury of duplicating efforts. Should the aphid plaguing soybeans be identified positively as the soybean aphid, efforts will soon be underway to learn more of its biology, damage, thresholds, and controls.

Rather than re-write what information is known at this time, please refer to the following web sites:

University of Wisconsin: <http://ipcm.wisc.edu/wcm/00-22insect1.html>

University of Minnesota: <http://www.vegedge.umn.edu/mnvegnew/vol2/818new.htm>

Michigan State University: <http://www.msue.msu.edu/ipm/CAT00_field/FC08-17-00.htm#1>

University of Illinois: <http://www.ag.uiuc.edu/cespubs/pest/articles/200020h.html>

New South Wales Agriculture, Australia (excellent fact sheet on the soybean aphid): <http://www.agric.nsw.gov.au/Hort/ascu/insects/aglycin.htm>.

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Stinging Caterpillars - *(John Obermeyer, Rich Edwards, and Larry Bledsoe)* -

- Two caterpillar species now feeding on field crops can inflict painful stings
- Other caterpillars, such as woollybears and thistle caterpillars, are harmless

Though crops aren't exactly inviting this time of year, "dyed in the wool" pest managers continue to monitor for insect and weed pests. Occasionally at this time of year peculiar looking caterpillars can be found feeding on the leaves of corn and soybean. Look carefully before you touch! Two species, the Io moth and the saddleback caterpillar, found in fields sting when handled! Though both species can be found on many different plants, in field crops the Io feeds on both corn and soybean and the saddleback is only encountered in corn.

The body of these caterpillars are covered with "stinging" or "nettling" hairs which produce a stinging sensation and temporary rash when the caterpillars come in contact with the skin. These stinging hairs resemble spines; whereas the often encountered and harmless woollybear is hairy looking. To add confusion to the matter, there are many more formidable looking caterpillars found on various plant species that are harmless. The old adage "when in doubt, leave it alone" applies. A color picture of the Io and saddleback caterpillar is available in the 2000 revision of the *Field Crops Pest Management Manual*.

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Black Light Trap Catch Report
(Ron Blackwell)

County/Cooperator	8/8/00 - 8/14/00							8/15/00 - 8/21/00						
	VC	BCW	ECB	GC	CEW	FAW	AW	VC	BCW	ECB	GC	CEW	FAW	AW
Clinton/Blackwell	1	4	472	1	7	3	1	0	1	246	2	7	2	11
Dubois/SIPAC	1	3	4	35	100	18	13	1	13	17	30	38	6	23
Jennings/SEPAC	0	1	3	11	31	5	0	0	1	1	34	5	0	4
LaPorte/Pinney Ag Center	0	1	566	4	7	0	1							
Lawrence/Feldun Ag Center	0	10	1	11	145	14	28	0	6	2	7	8	6	24
Randolph/Davis Ag Center	0	1	76	8	16	6	6	0	1	72	3	13	2	6
Tippecanoe/P.J. Boeve										104				
Whitley/NEPAC	0	3	766	6	10	20	21	1	3	326	2	4	10	5

BCW = Black Cutworm ECB = European Corn Borer GC = Green Cloverworm CEW = Corn Earworm
AW = Armyworm FAW = Fall Armyworm VC = Variegated Cutworm

Agronomy Tips

It's Never Too Late to Walk Your Fields - (*Bob Nielsen*) –

- Some stalk rots beginning to appear
- Some odd ear formation being reported

The coffeeshop talk always thins out as September approaches and folks begin to gear up for fall harvest. Part of the reason for the paucity (I learned a new word recently!) of gossip is that fewer people are out walking their fields than earlier in the season. However, I want to raise a couple of issues that I think are potentially important for corn growers to consider before harvest begins.

First of all, stalk rots and lodging are developing here and there throughout the state. In the fields that I have walked, the stalk rots are occurring in either random plants throughout the field or in many plants in smaller stressed areas of the field. The affected plants are dying prematurely, causing the grain to also mature earlier than expected.

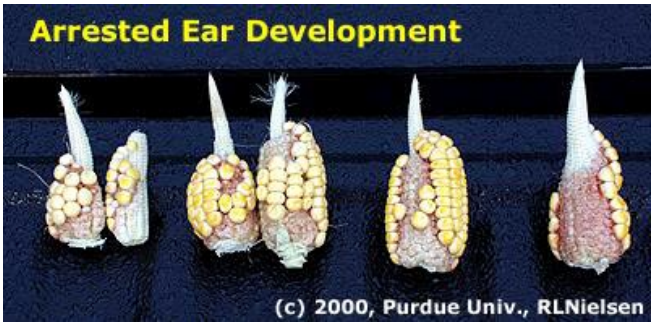
At the onset of the disease, the affected plants exhibit a gray-green appearance as the plant tissue slowly dies, eventually bleaching out to a straw color as complete death occurs. Healthy or less infected plants nearby will still be green and healthier. In one field earlier this week, grain of healthy plants was at early to mid-dent stage while that of the diseased plants was already beginning to black layer. The affected plants eventually collapse at the lower nodes and fall over or lodge.

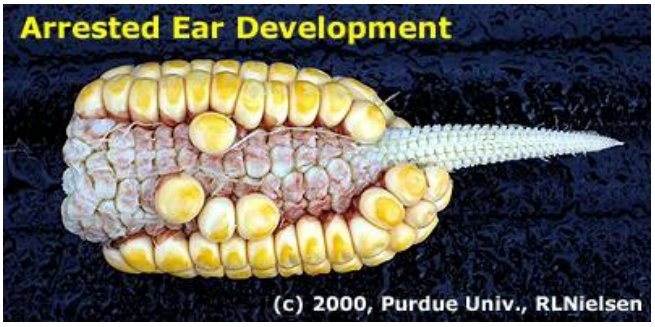
The bottom line from these observations is that farmers should be walking their fields during the next several weeks and determining whether stalk rots and the resulting stalk lodging are developing in individual fields. If so, then grain harvest should not be delayed any longer than necessary in order to avoid potentially significant mechanical harvest losses due to the severe stalk lodging.

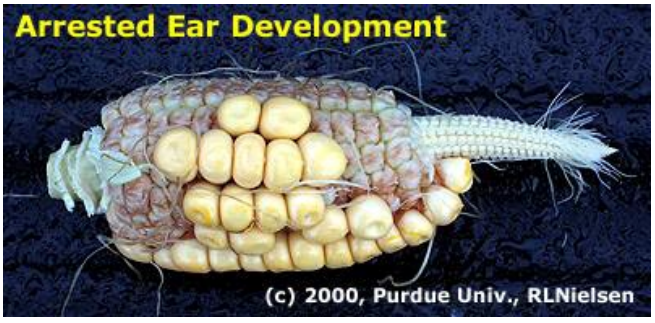
Another interesting phenomenon I wanted to mention is that I have had a handful of reports in the last week or so of stunted or arrested ear development in plants that otherwise look normal. The affected ears are reminiscent of the so-called 'beer-can ear syndrome' that was widely observed back in 1992 and in some years since. I was recently in a variety plot where one hybrid in particular exhibited quite a few ears that were severely stunted.

Of the reports I have received, there appears to be no common herbicide link as a possible contributing cause. The reports have been too few to yet indicate whether the problem is occurring within a particular hybrid pedigree. Plants whose ear(s) are severely stunted will often turn a vivid purplish-red due to the imbalance between available photosynthate and the paucity (there's that word again!) of kernels. If you've observed this problem, I would appreciate hearing about it.

Don't forget, this and other timely information about corn can be viewed at the Chat 'n Chew Café on the World Wide Web at <http://www.kingcorn.org/cafe>. For other information about corn, take a look at the Corn Growers' Guidebook on the World Wide Web at <http://www.kingcorn.org/>.







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Post-Maturity Grain Drydown in the Field - (*Bob Nielsen*) –

- Early maturation of corn grain means greater drying rates
- Indiana corn harvest likely to begin earlier than usual

Given the percentage of Indiana's corn crop that is rapidly approaching physiological maturity and the early time frame in which it is occurring, there is much talk down at the Chat 'n Chew Café about the opportunities for reducing or eliminating grain drying costs this fall. Indeed, early maturation of the corn crop typically results in faster drydown of grain simply because it is occurring in a time frame that is relatively warmer than usual.

Grain moisture content continually decreases as the kernel develops. Loss of grain moisture occurs partially through the plant (cob and ear shank), partially through the husk leaves and partially through the exposed end of the ear.

Hybrid variability for the rate of grain moisture loss during post-maturity drydown and the resulting grain moisture content at harvest are of great interest to grower and seed industry alike. Growers desire hybrids with superior yielding ability (maximum gross income) that also dry very quickly in the fall (minimum drying or grain shrinkage costs). For an excellent discussion on grain weight shrinkage, see Hicks and Cloud, 1991. *Calculating Grain Weight Shrinkage in Corn Due to Mechanical Drying*. NCH-61. Purdue Univ. Cooperative Extension Service, W. Lafayette, IN 47907 (on the Web at <http://www.agcom.purdue.edu/AgCom/Pubs/NCH/NCH-61.html>).

The seed industry also uses grain moisture loss data to rate hybrids for relative maturity. Many seed companies assign relative hybrid maturity ratings on the basis of relative harvest moisture differences among a group of hybrids. Two hybrids that differ in one 'day' of relative maturity will typically vary by about 0.5 % grain moisture if planted and harvested on the same days. Relative hybrid maturity ratings are most consistent within, not among, seed companies.

Certain hybrid characteristics interact to influence grain moisture loss rates. The relative importance of each trait varies throughout the duration of the field drydown process.

- **Husk Leaf Number**. The fewer the number of husk leaves, the more rapid the grain moisture loss.
- **Husk Leaf Thickness**. The thinner the husk leaves, the more rapid the grain moisture loss.
- **Husk Leaf Senescence**. The sooner the husk leaves senesce (die), the more rapid the grain moisture loss.
- **Husk Coverage of the Ear**. The less the husk covers the tip of the ear, the more rapid the grain moisture loss.
- **Husk Tightness**. The looser the husk covers the ear, the more rapid the grain moisture loss.
- **Ear Declination**. The sooner the ears drop from an upright position to a downward position, the more rapid the grain moisture loss.
- **Cob Diameter**. The narrower the cob diameter, the more rapid the grain moisture loss.
- **Kernel Pericarp Thickness**. The thinner the pericarp, the more rapid the grain moisture loss.

Grain moisture loss in the field occurs at a nearly linear rate within a range of grain moisture content beginning at about 40 percent and ending at 15 to 20 percent, then tapers off to little or no additional moisture loss after that. Figure 1 illustrates changes in grain moisture content over time for an adapted medium maturity hybrid grown in Indiana in 1992 (unusually cool fall) and 1994 (more typical fall temperatures). Grain moisture loss was linear in both years until early to mid-October when loss rates leveled off to near zero.

As you might expect, the exact rates of grain moisture loss in the field are closely related to air temperature during the dry down period. The warmer the drydown period, the faster the grain will dry. In fact, there is a close relationship between the average rates of grain moisture loss per day and the average daily heat unit accumulation during grain drydown (Fig. 2).

Bear in mind that grain moisture loss for any particular day may be quite high or low depending on the exact temperature, humidity, sunshine, or rain conditions that day. It is not unheard of for grain moisture to decline more than one percentage point per day for a period of days when conditions are warm, sunny and dry. By the same token, there may be zero drydown on cool, rainy days.

Since heat unit accumulations are closely related to calendar date, there is also a close relationship between the average rates of grain moisture loss per day during the drydown period and the date when the grain nears physiological maturity (approximately 30 % moisture content). Average daily drydown rates will range from about 0.8 percentage point per day for grain that nears maturity in late August to about 0.4 percentage point per day for grain that nears maturity in mid- to late September (Fig 3).

Given the opportunity for early maturation of corn in Indiana in 2000, it is quite likely that grain drydown rates will be favorably high. Be prepared for an early start to grain harvest.

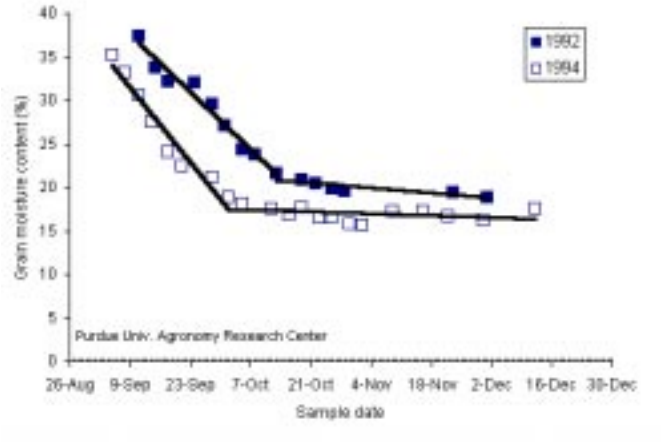

Figure 1. Change in grain moisture content in the field for a 111-day corn hybrid grown in westcentral Indiana in 1992 (cool fall) and 1994 (more 'normal' fall).

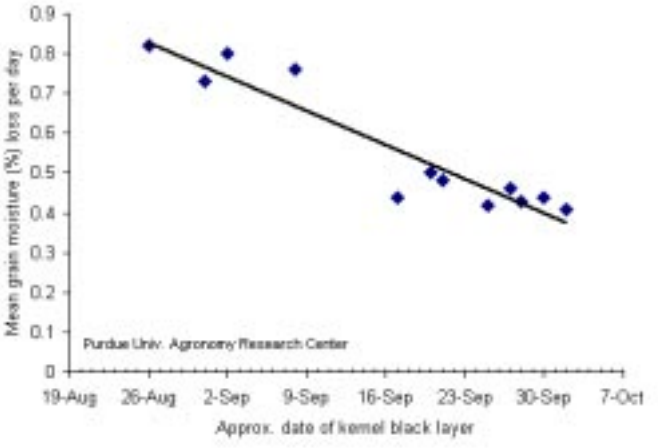

Figure 3. Average rates of grain moisture loss in the field relative to the date of kernel black layer for three corn hybrids planted in late April to early May, 1991-94, in westcentral Indiana.

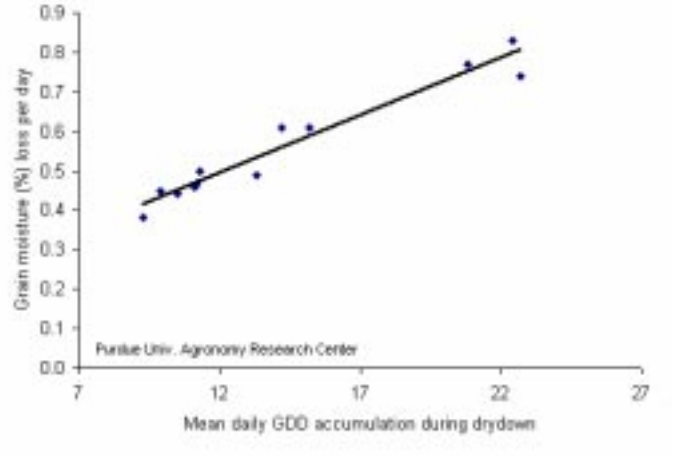

Figure 2. Average rates of grain moisture loss in the field relative to mean daily GDD accumulation during drydown for three corn hybrids planted in late April to early May, 1991-94, in westcentral Indiana.

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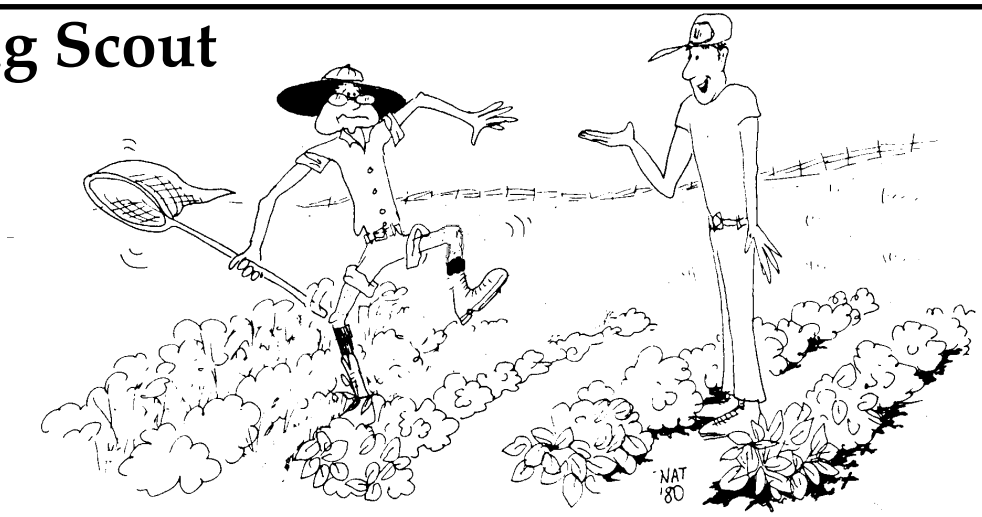
http://www.entm.purdue.edu/Entomology/ext/targets/newslett.htm

Bug Scout



Hey Bug Scout, is it true that soybeans infested with that new aphid get all sticky?

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